

June 11, 2007

Mr. Ron Salt
Network Management
Hydro One Networks Inc.
TCT15
483 Bay Street
Toronto, Ontario
M5G 2P5

Dear Mr. Salt,

***T2 Transformer Upgrade at Wilhaven DS
Notification of Conditional Approval of Connection Proposal
CAA ID Number: 2007-EX320***

Thank you for the detailed information regarding the replacement of the three phase transformer T2 at Wilhaven DS with a new three phase transformer.

Since the rating of the replacement unit is higher than the original transformer, we have concluded that the proposed change will not result in a material adverse effect on the reliability of the IESO-controlled grid.

The IESO is therefore pleased to grant **conditional approval** for the modification detailed in the attached assessment report subject to your signed acknowledgment below. Any material changes to your proposal may require re-assessment by the IESO in accordance with Market Manual 2.10, and may nullify your conditional approval.

Final approval to connect the facility to the IESO-controlled grid will be granted upon successful completion of the IESO Facility Registration process including, without limitation, satisfactory completion of the requirements set out in the System Impact Assessment report. During this process you shall demonstrate the requirements have been fulfilled and the equipment installed has characteristics no worse than those in the proposal assessed by the IESO. Please contact market.entry@ieso.ca if you have not received a Facility Registration Summary package within the next 10 days.

For further information, please contact the undersigned.

Yours truly

Michael Falvo
Manager - Transmission Assessments & Performance
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cc: IESO Records

Hydro One Distribution Inc. acknowledges receipt of the System Impact Assessment Report setting out the IESO requirements for final approval, and commits to fulfill these requirements, and all other applicable Market Rules, before receiving final approval to connect to the IESO-controlled grid.

Dated: _____

Per: _____

Name: _____

Title: _____

ASSESSMENT SUMMARY**Hydro One Distribution Inc.****1.0 GENERAL DESCRIPTION**

Transformer T2 at Wilhaven DS is scheduled to be replaced. Wilhaven DS is connected to the 115 kV circuit H9A. The station is summer peaking and has been overloaded during the last 2 summers.

With the new T2 in place, the station's capacity will be 38 MVA in the summer and 46 MVA in the winter. These capacities are based on the capacity of the smallest unit plus 15 MVA for their Mobile Unit Substation. Hydro One Distribution is planning to further increase the station capacity by 2010 by the addition of monitoring for transformer top oil temperature and fan failure.

The scheduled in-service date for the replacement transformer T2 is June 15, 2007.

2.0 PROPOSED MODIFICATION

A comparison of the technical specifications between the replacement transformer and the original T2 is given below. Existing transformer T1 is also shown for comparison purposes.

Wilhaven DS	Original T2	Replacement T2	Existing T1
Configuration	three phase	three phase	three phase
Transformation (kV)	115.5 / 29.32	115.5 / 29.3	115.5 / 29.3
Winding Configuration	delta / wye	delta / wye	delta / wye
Thermal Rating	15 ONAN	20 ONAN 27 ONAF 34 ONAF	20 ONAN 27 ONAF 34 ONAF
Notes: Continuous, 15 Minute LTR and 10 Day LTR are not applicable for Distribution transformers. Overloads are accepted by Hydro One Distribution rather than cutting customers off, i.e. no load shedding is done to alleviate short-term overloads.			
Unit Planning Loading Limit (PLL): Summer: ONAN rating + 15%; Winter: ONAN rating + 55%			
	Summer: 17.25 MVA Winter: 23.25 MVA	Summer: 23 MVA Winter: 31 MVA	Summer: 23 MVA Winter: 31 MVA
Station PLL: (Lowest unit PLL plus 15 MVA for the Mobile Unit Substation)			
	Summer: 17.25 + 15 = 32.25 MVA Winter: 23.25 + 15 = 38.25 MVA	Summer: 23 + 15 = 38 MVA Winter: 31 + 15 = 46 MVA	
Positive Sequence Impedance (H-X)	R = (0.5%) 0.667% X = (8.5%) 11.33% on (15) 20 MVA base	R = 0.276% X = 8.22% on 20 MVA base	R = 0.279% X = 8.26% on 20 MVA base
Impedance to Ground	Solidly grounded	Solidly grounded	Not known
Under-Load Tap-Changer (ULTC)	27.6 +4.61 kV, -2.765 kV 32 steps	27.6 ± 4.395 kV 32 steps	27.6 ± 4.395 kV 32 steps
Off-Circuit Tap-Changer (OCTC)	Not applicable	Tap 1 127.05 kV Tap 2 124.163 kV Tap 3 121.275 kV Tap 4 118.388 kV Tap 5 115.5 kV	Tap 1 127.05 kV Tap 2 124.163 kV Tap 3 121.275 kV Tap 4 118.388 kV Tap 5 115.5 kV
In service off-circuit tap position	Not known	Not known	Not known
Manufacturer	Pioneer	FP	FP
Serial #	61-02-67919	1621901-002	1621901-001

3.0 ASSESSMENT

The information provided by Hydro One Distribution Inc. shows that the technical characteristics of the replacement transformer T2 are better than those of the original T2. Thermal ratings for the replacement transformer are higher than the original T2 and identical to T1. The positive sequence impedance is lower and almost identical to the existing T1. The new T2 will have the same configuration and identical ULTC arrangements and off-circuit tap-changer settings as the existing T1.

The maximum load on T1 occurred at 4:00 p.m. on July 4, 2006 with 36.3 MW and 40.3 MVA at an assumed power factor of 90% lagging. Before September 2006 T1 had an older style of meter incapable of reading reactive power.

The maximum load on T2 occurred on August 1, 2006 at 5:00 p.m. with 18.9 MVA (17.5 MW and 7.2 MVA).

The maximum station load occurred at 4:00 p.m. on July 4, 2006 with 47.4 MW and 52.1 MVA. Note that the power factor for T1 at this time was unavailable and assumed to be 90% lagging. This was above the station capacity. In 2008 any load above the station capacity will be permanently transferred to Navan DS.

As shown in figures 1 and 2 below, the power factor has been higher than the required 90% lagging as required by the Market Rules at all times except for one occasion.

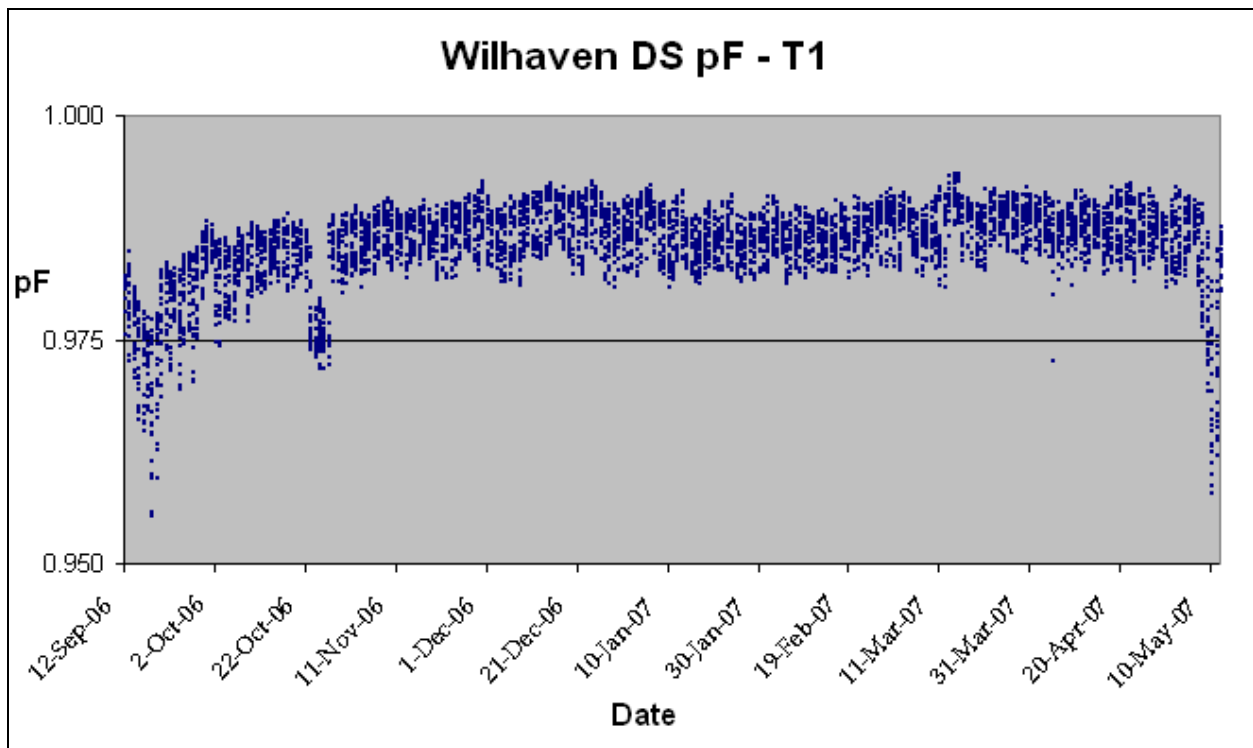


Figure 1: Power Factor @ Wilhaven DS - T1

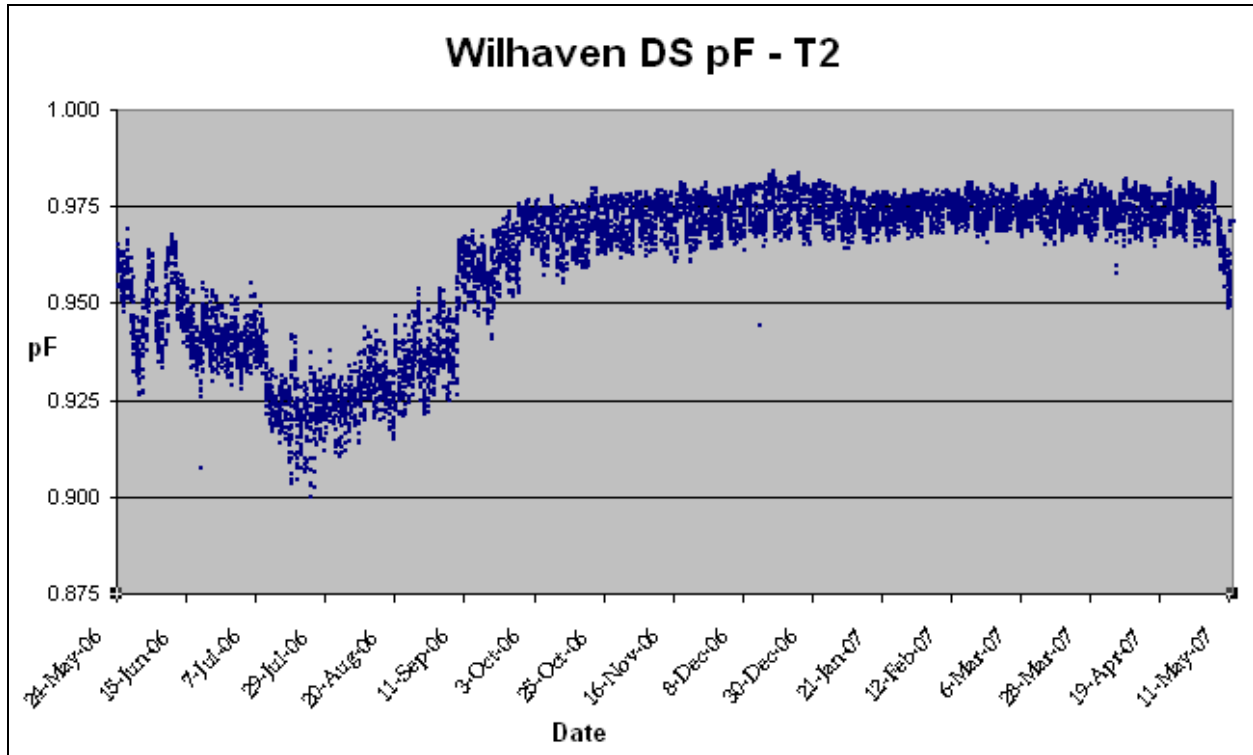


Figure 2: Power Factor @ Wilhaven DS - T2

4.0 CONCLUSIONS

It can be concluded that the replacement transformer represents an improvement of original equipment and will not result in a material adverse effect on the reliability of the IESO-controlled grid because:

- Thermal ratings for the replacement transformer are higher than the original T2 and identical to the existing T1.
- The positive sequence impedance is lower than the original T2 and is now almost identical to the existing T1.
- The replacement transformers will be equipped with a ULTC and off-circuit tap-changer that is identical to the existing T1's ULTC and off-circuit tap-changer.
- The station load has exceeded the station rating and is expected to be higher than the station rating this summer.

5.0 REQUIREMENTS

Hydro One Distribution Inc. must notify the IESO as soon as it becomes aware of any changes to the assumptions made in the connection assessment. The IESO will determine whether these changes require a re-assessment.

Some recognized contingencies (e.g. load shedding, open line end) can cause a temporary voltage increase above the maximum continuous voltage of 115 kV. For these conditions, connection equipment may be exposed to voltages slightly above its maximum continuous rating for the short period of time that it takes the IESO to direct operations to restore a normal voltage profile, and to prepare for the next contingency. This re-preparation period will be as short as possible, but it will not take longer than 30 minutes. Therefore, the IESO requires that the 115 kV connection equipment have the following requirements:

- connection equipment must have a maximum continuous voltage rating of at least 132 kV in southern Ontario; and
- equipment must remain in service, and not automatically trip, for voltages up to 5% above the maximum continuous rating or 138.6 kV, for up to 30 minutes, to allow the system to be re-dispatched to return voltages within their normal range.

The Market Rules (chapter 4, section 7.5) require that each distributor shall provide the IESO on a continual basis with on-line monitored quantities as specified in Appendix 4.17. Dedicated PTs and CTs are usually necessary to provide these quantities. Currently, Wilhaven DS does not have PTs or CTs on either the high or low voltage side of the transformer and therefore, is not required by the Market Rules to provide monitored quantities to the IESO.

Some newer revenue meters have the capability to provide the operational data along with revenue meter data and therefore, when the current revenue meter expires, it is likely that the IESO will require the installation of a revenue meter capable of providing the IESO with the required quantities. Hydro One Distribution Inc. is required to notify the IESO 6 months in advance of the revenue meter replacement.

Hydro One Distribution Inc. is required to meet the requirements with respect to protection systems for the new transformers and coordination with the existing protection systems, as outlined in the Transmission System Code.

6.0 NOTIFICATION OF CONDITIONAL APPROVAL

This expedited System Impact Assessment concludes that the installation of replacement transformer T2 for the existing transformer T1 is not expected to have a material adverse effect on the IESO-controlled grid. It is therefore recommended that a Notification of Conditional Approval of the Connection Proposal be issued, subject to the requirements detailed above.

